

What is claimed is:

1. A focal length measuring device comprising:
  - a light source unit for generating a collimated light;
  - a light deflecting unit for deflecting the collimated light;
  - a light receiving unit which is disposed opposite to the light source unit so as to sandwich the light deflecting unit; and
  - wherein the light receiving unit is disposed near a rear focal plane of an optical element to be tested; and
  - the light receiving unit outputs an information for calculating a focal length of the optical element to be tested.
2. A focal length measuring device according to Claim 1 wherein the light deflecting unit is disposed near a front focal plane of the optical element to be tested.
3. A focal length measuring device comprising:
  - a light source unit for generating a collimated light;
  - a light deflecting unit for deflecting the collimated light; and
  - a light receiving unit which is disposed opposite to the light source unit so as to sandwich the light deflecting unit; and
  - wherein the light deflecting unit is disposed near a front focal plane of the optical element to be tested; and
  - the light receiving unit outputs a position information for calculating the focal length of the optical element to be tested.

4. A focal length measuring device according to any one of Claims 1 or 3 further comprising:

a calculating unit

wherein the calculating unit is provided with a calculating process for calculating a focal length of the optical element to be tested according to the position information.

5. A focal length measuring device according to Claim 4 wherein

the position information includes a position information based on a first light

under condition that the first light reaches at the light receiving unit after the first light is deflected to a first direction by the light deflecting unit.

6. A focal length measuring device according to Claim 5 wherein

the position information includes a position information based on a position of the light which reaches at the light receiving unit

under condition that the light deflecting unit is not provided.

7. A focal length measuring device according to Claim 5 wherein

the position information includes a position information based on a second light

under condition that the first light reaches the light receiving unit after the first light is deflected to a second direction which is different from the first direction by the light deflecting unit.

8. A focal length measuring device according to Claim 1 wherein

the light deflecting unit is a diffraction grating.

9. A focal length measuring device according to Claim 1 further comprising:
  - a supporting unit for supporting the optical element to be tested,
  - wherein the supporting unit is disposed between the light deflecting unit and the light receiving unit.
10. A focal length measuring device according to Claim 1 further comprising:
  - a double telecentric optical system,
  - wherein the double telecentric optical system is disposed between the supporting unit and the light receiving unit.
11. A focal length measuring device according to Claim 1 wherein
  - the light receiving unit is an image-pickup element.
12. A focal length measuring device according to Claim 1 further comprising:
  - a moving unit,
  - wherein the moving unit can move the light receiving unit in a plane orthogonal to an optical axis of an optical path formed between the light source unit and the light receiving unit.
13. A focal length measuring device according to Claim 1 wherein
  - the light receiving unit is provided with a pin hole.
14. A focal length measuring device according to Claim 13 wherein
  - the light receiving unit is provided with a light receiving element and at least a

lens, and

the lens is disposed such that the light receiving element and the pin hole conjugates.

15. A focal length measuring device according to Claim 1 wherein  
a deflection angle  $\theta$  (°) by the light deflecting unit satisfies a condition such as  
 $\sin \theta < 0.1..$
16. A focal length measuring device according to Claim 1 wherein  
the light source unit includes a collimating optical system.